WHAT IS CLAIMED IS:

1. A motor speed detecting device for use between a motor and a system, comprising:

   a first input terminal and a second input terminal, wherein said first and second input terminals are electrically connected respectively to a constant voltage potential and a ground potential for continuously receiving an electrical power; and

   a third input terminal electrically connected between said motor and said system, wherein said third input terminal receives a control signal sent by said system for controlling a speed of said motor.

2. The device according to claim 1, wherein said motor is a fan motor and said system is a portable computer.

3. The device according to claim 1, wherein said control signal is a PWM (pulse width modulation) signal.

4. The device according to claim 1, wherein said motor speed detecting device further comprises :

   a speed output module electrically connected between said first input terminal and said second input terminal for continuously generating a speed signal in response to said speed of said motor; and

   a speed output terminal electrically connected between said speed output module and said system for outputting said speed signal to said system.

5. A motor speed control method using in a motor speed detecting device between a motor and a system, wherein said system outputs a PWM signal to said motor for controlling said speed, comprising steps of:

   setting a first predetermined speed of said motor and finding a first frequency of said PWM signal corresponding to said first predetermined speed, wherein said first frequency is a multiple of said first predetermined speed;

processing a learning process to said motor, wherein said system inputs PWM signals having a constant testing frequency but different duty cycles one by one to said motor and records said speed in response to said different duty cycles for finishing a table recoding a relationship between said duty cycles and said speed; and

finding a first duty cycle according to said first predetermined speed and said table, and then said system outputting a PWM signal having said first frequency and said first duty cycle to said motor so that said motor works at said first predetermined speed.

6. The method according to claim 5, wherein said testing frequency is not equal to one of said first frequency and a multiple of said first frequency.
7. The method according to claim 5 further comprising steps of:

   setting a second predetermined speed of said motor and finding a second frequency of said PWM signal corresponding to said second predetermined speed, wherein said second frequency is a multiple of said second predetermined speed; and

   finding a second duty cycle according to said second predetermined speed and said table, and then said system outputting a PWM signal having said second frequency and said second duty cycle to said motor so that said motor works at said second predetermined speed.
8. The method according to claim 7, wherein said testing frequency is not equal to one of said second frequency and a multiple of said second frequency.
9. The method according to claim 5, wherein in said learning process, said system inputs PWM signals having a fixed testing frequency and duty cycles

decreasing 4% each time from 100% to said motor one by one and records said speed in response to said duty cycles for finishing a table recording a relationship between said duty cycles and said speed.

10. The method according to claim 5, wherein said motor is a fan motor and said system is a portable computer.

11. A heat dissipating device for a chip of a system, comprising:

a heat sink connected to a surface of said chip for enhancing a heat dissipating efficiency of said chip;

a fan driven by a control signal outputted by said system for speeding an air flow around said heat sink;

a first input terminal and a second input terminal, wherein said first and second input terminals are electrically connected respectively to a constant voltage potential and an ground potential for continuously receiving an electrical power;

a third input terminal electrically connected between said fan and said system, wherein said third input terminal receives said control signal sent by said system for controlling a speed of said fan.

12. The device according to claim 11, wherein said system is a portable computer.

13. The device according to claim 11, wherein said control signal is a PWM (pulse width modulation) signal.

14. The device according to claim 11, wherein said heat dissipating device further comprises:

a speed output module electrically connected between said first input terminal and said second input terminal for continuously generating a speed signal in response to said speed of said fan; and a speed output terminal electrically connected between said speed output module and said system for outputting said speed signal to said system.

15. A method of controlling a fan speed, comprising steps of:

setting a first predetermined speed of said fan and finding a first frequency of said PWM signal corresponding to said first predetermined speed, wherein said first frequency is a multiple of said first predetermined speed;

processing a learning process to said fan, wherein said system inputs PWM signals having a constant testing frequency but different duty cycles one by one to said fan and records said speed in response to said different duty cycles for finishing a table recoding a relationship between said duty cycles and said speed; and

finding a first duty cycle according to said first predetermined speed and said table, and then said system outputting a PWM signal having said first frequency and said first duty cycle to said fan so that said fan works at said first predetermined speed.

16. The method according to claim 15, wherein said testing frequency is not equal to one of said first frequency and a multiple of said first frequency.

17. The method according to claim 15, further comprises steps of:

setting a second predetermined speed of said fan and finding a second frequency of said PWM signal corresponding to said second predetermined speed, wherein said second frequency is a multiple of said second predetermined speed; and

finding a second duty cycle according to said second predetermined speed and said table, and then said system outputting a PWM signal having said second frequency and said second duty cycle to said fan so that said fan works at said second predetermined speed.

18. The method according to claim 17, wherein said test frequency is not equal to one of said second frequency and a multiple of said second frequency.

19. The method according to claim 15, wherein in said learning process, said system inputs PWM signals having a fixed testing frequency and duty cycles decreasing 4% each time from 100% to said fan one by one and records said speed in response to said duty cycles for finishing a table recording a relationship between said duty cycle and said speed.